P**recision* ***Tomorrow's

A**pplication* ***Technology

T**illage* ***Today

S**ystems* ***for your farm!

I have been developing the latest innovations by listening to and working with innovative farmers for over the past 25 years! This is a documentary of the cultivator refurbishing package that I am developing with Warsaw Welding to allow farmers to refurbish their old cultivators and make them work better than they did when they were new!

I was the Orthman rep in the 90's in the Carolinas and Georgia.

Pictured is one of Joel Boseman's Orthman cultivators that he has adapted rolling cultivator spiders to.

The wrap around parallel linkage has held up well for over 20 years.

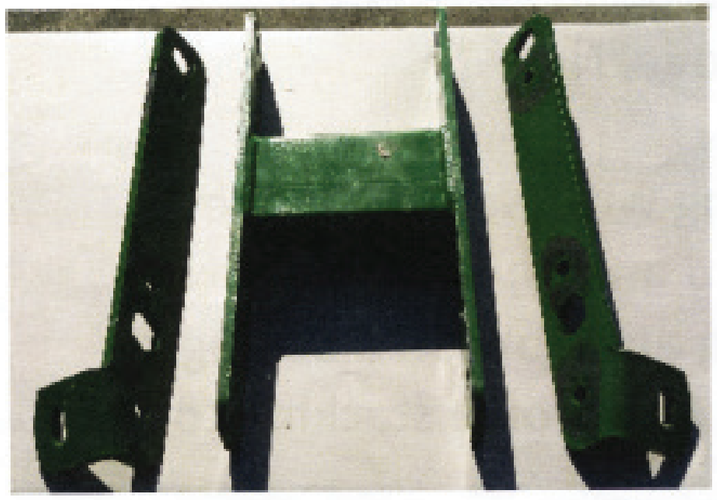
Also pictured is a Norwest cultivator row unit that I have been selling for the past 2 seasons.

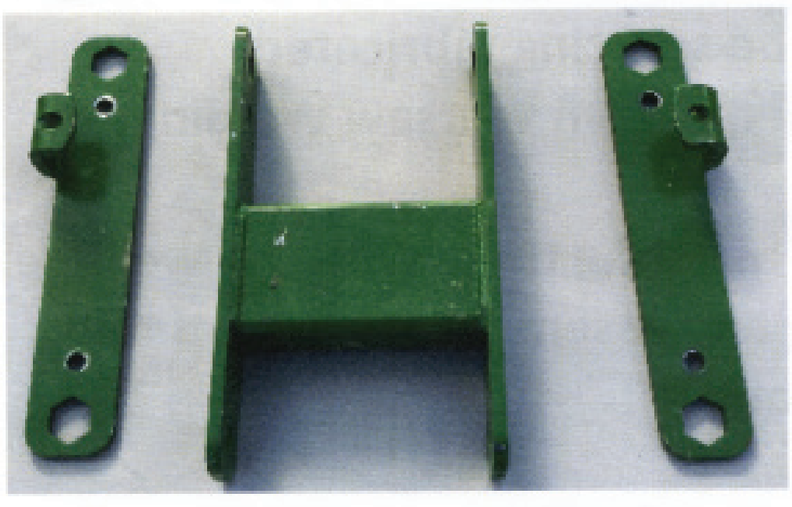
It has performed very well for Burch, Tyson, Fisher and Boseman Farms. Burch Farms liked theirs so well that they purchased a second 8 row machine this past fall.

PATS "Northman" Parallel Linkage Parts

Top Linkage

Part #	# Required Per Row	Description
2x2tube	1	2" x 4" x 3/16" wall tubing
TLIP	2	17" x 2.5" x 3/8" Inner Plates
LDPL	1	17" x 2.5" x 3/8" Left Outer Plate with Down Pressure Tab
LDPR	1	17" x 2.5" x 3/8" Right Outer Plate with Down Pressure Tab





Bottom Linkage

2x2tube	1	2" x 4" x 3/16" Tube 7" Long
BLIP	2	14" x 2.5" x 3/8" Inner Plates
BLDPL	1	14" x 2.5" x 3/8" Left Outer Plate with Down Pressure Tab
BLDPR	1	14" x 2.5" x 3/8 Right Outer Plate with Down Pressure Tab

Pictured is the parallel linkage that Warsaw Welding and I built.

It has the following unique features:

1 – The bolt on plates not allow the head and nut of the bolt to rotate.

2 – Increases strength by spreading the load to the bolt head and nut.

3 – The down pressure spring tabs are formed, not welded.

By utilizing the dimensions of the Norwest parallel linkage and saddle clamp and the Orthman down pressure spring tabs we have created, in my opinion the strongest linkage per pound ever built!

I call it the PATS "Northman" linkage.

Pictured is the PATS cultivator that Warsaw Welding build for Millstream Farms located near Newton Grove, NC.

I have a long standing relationship with Millstream Farms. I sold them a 8 row PATS strip till in 2001, a Besler cotton stalk puller in 2004 and a PATS hooded tobacco sprayer in 2011.

Allen Rose gave me one of the best compliments I have ever had earlier this year. I was showing him the cultivator that Warsaw Welding and I were building for Millstream Farms. I told him that I did not have the exact price, as Warsaw Welding was going to give the price after it was built.

Allen said he found that hard to believe. I asked him what he meant. He said he did not know of anything Henry Chancy had bought without knowing the price.

I would like to thank Henry at this time for trusting Warsaw Welding and me to build this cultivator without having a solid price.

I promised Henry that the PATS cultivator would have features that were superior to the Norwest and the net price would be less. We delivered on that promise!

Pictured is the PATS cultivator that Warsaw Welding and I built for Jones Family Farms located near Bailey, NC.

As you can see Jim took an old hitch and toolbar to mount the row units. He also took old rolling cultivator clamps to mount his new SMA 16” hard surfaced spider gangs. SMA has been marketing these gangs for several years now with great customer satisfaction!

Warsaw Welding is a dealer for SMA and are very competitive in their pricing.

I would like to thank Jimmy Burch for recommending Henry and Jim buy a cultivator from me with a parallel linkage. This is my first orange PATS. Jim said he wanted it orange like a sweet potato!

On the following pages you will see pricing on 4 and 8 row cultivators. They are unpainted and to be picked up at Warsaw Welding. Painting is available, but I don’t have that information this morning.

Warsaw Welding will give you a guaranteed delivery date once order has been prepaid.

I will deliver and help assemble for a negotiated hourly labor rate.

4 Row Cultivator Summary Page

Warsaw Welding	Total Price	$2,800.00
	Welding Option	$500.00
Perkins Sales	Total Price	$195.81
Fastenal	Total Price	$230.40
Grand Total		$3,762.10
Clifton Dixon 10% commission		$376.21
PATS-DC R & D / Administrative 5%		$206.91
Total		$4,345.22

8 Row Cultivator Summary Page

Warsaw Welding	Total Price	$5,040.00
	Welding Option	$900.00
Perkins Sales	Total Price	$335.01
Fastenal	Total Price	$385.16
Grand Total		$6,660.17
Clifton Dixon 10% commission		$666.01
PATS-DC 5% R & D/Administration		$299.70
Total		$7,625.88

Pricing and Specifications subject to change

Pictured is the first Norwest cultivator I sold Burch Farms last year. I would like to thank Burch Farms and Lilo Oreno for the support they have given me.

Starting with farmers Danny Kornegay and Hodge Kitchin in 1991 I have been able to utilize farm shops and resources to developing cutting edge innovations in conservation tillage, cotton stalk cutting and root pulling, tobacco flower trimming and hooded spraying and my latest project cone rolling.

I was fortunate to begin building cone rollers for the TriEst Ag Group in 2014 to seal in fumigant. I was able to do this with Joel Boseman allowing me to use his shop and old equipment in the bushes. Fisher Family Farms, (pictured on the facing page) JB Rose and Sons Farms and Dawson Brothers Farms (pages 14 & 15) purchased cone rollers in 2015.

Scott Fisher made me aware of the hydraulically driven cone rollers being used in Europe. I immediately went to work on this with Ron Langley, owner of Langley Industrial on designing a hydraulically driven cone roller.

Scott and Bobby Britt along with Burch Farms are my cooperators in this project.

I met Scott and Bobby Britt through Jimmy Burch. They market their sweet potatoes with Jimmy.

Scott asked Jimmy where he could get a cone roller. Jimmy recommended me.

Scott and Bobby met me at Burch Farms to look at the cone roller I built for them in 2015.

We then went to Fisher Family Farms in Gold Rock to look at theirs.

Scott went with me to Langley Industrial to talk with Ron Langley about building a 4 row. (Scott is pictured with Ron on facing page.)

Scott put in his order not knowing what the final cost would be.

Scott and Bobby are pleased with Langley's price and the quality of the parts.

We were very pleased with the performance of the machine, but felt that we needed more power.

When they started transplanting tobacco, several rear seals blew.

It was then Bill Burch called in Roger Pooch, owner of OEM SUPPLY & Service LLC to come assess the problem.

Burch Farms purchased a 4 row cone roller from me in 2015. They realized that they needed an 8 row and ordered one after they saw the great job Britt Farm's machine was doing.

Bill called in Roger Pooch (pictured with Scott and him on the facing page) to design the system for Burch Farm's 8 row machine shown on the facing page.

Roger's assessment was that:

1 – A reservoir and pump were required.
2 – A flow divider was necessary to reduce bac pressure.
3 – A small bypass line was required to relieve rear seal pressure.
4 – A pressure relief valve was necessary to protect the whole system.

We only ran it for a few rounds on Monday. I was very pleased with the performance.

I would like to thank Roger, Langley Industrial and Warsaw welding for helping me design and work out the details on these first 2 that I am aware of hydraulically driven cone rollers in the United States! I believe we have built the first 8 row in the world!

Introducing the

Precision Application Tillage Systems

Sweet Potato

Harvest Management System that will:

1 – Improve quality by tightening the skins of the potato.

2 – Allow potato size to be managed by pulling the mother root.

3 – Puts 2 rows into a single windrow that will allow hand harvesting of the number 1 potatoes and allow more efficient mechanical or hand harvesting of the jumbos and canners.

4 – Allows the jumbos and canners to be covered with soil to allow harvest at a later date mechanically or by hand.

Joel helped a friend finish harvesting his crop late last November. This gave me a chance to run side by side with a disc digger.

As you can see when the disc digger gets off the row, it cuts a lot of potatoes.

These are some of the advantages of the PATS digger:

1 – Practically eliminates cutting potatoes and reduces skinning.

2 – Easier to keep in correct position.

3 – 6 & 8 row machines are possible on existing folding and stacker toolbars.

4 – Puts 2 rows into a single windrow.

5 – Eliminates the deep furrows that are difficult for workers and trucks to cross.

I visited Tull Hill Farms on 10-23-2014 to talk with Kendall and Michael Hill about under cutting sweet potatoes to tighten up the skins.

Kendall adamantly told me that you cannot tighten the skins by under cutting.

He told me that the only way to shut the plant down was to mow the vines to cut off the food supply and energy supply.

Kendal and Michael both stressed the need for a machine to pull the sweet potato root to reduce skinning when harvesting and increase productivity.

On the facing page you can see where they mowed the vines, but rain had prevented them from harvesting and the vines had took a second growth.

This is why I feel that you need to run coulter blades like on the following page to terminate the vines in the middle.

I feel that we also need to trim the leaves on the top of the row at this time.

Robert Boyette told me that if you trim the leaves, it will tighten up the stems for a better pull of the mother root.

Another advantage of this process is that if you have a lot of rain the plant will still have enough leaves to supply oxygen to the plant to prevent souring of the potatoes.

I have been told if you get a lot of rain behind mowing the vines, the potatoes are starved for oxygen and the potatoes will sour.

I worked on pulling the mother root at Burch Farms all last fall. I found that if I pulled them too fast, it would snap them off at ground level.

Bill Burch told me that if I slowed the puller down and let the forward motion of the tractor pull the mother root.

I installed a motor with lower RPM's and higher torque. I also installed floating vine lifters to get more vines in the pulling apparatus.

This does work as the picture shows! I also mounted disc blades to cover up the potatoes, so the sun would not damage them.

I have been told that the potatoes need to stay in the ground for several days to a week for the skins to tighten properly. I would like to thank Burch Farms, Langley Industrial and Warsaw Welding for their support in this project. I look forward to continuing this fall.

I am confident that these tools will allow the sweet potato farmer to:

1 – Manage the size of his potatoes and help tighten the skins.

2 – Reduce harvesting damage while reducing harvesting loss.

We can also pull pigweed in organic crops with the puller.

Farmers are facing the worst harvest in decades due to the excessive rain and above average temperatures we have had this fall and winter, along with low crop prices. My plan is to deliver these components as cost effectively as possible to help farmers keep costs down in these difficult times.

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